

include other materials, such as plastic or composite material. In each case, touch sensitive cover **410** may include a surface, (e.g., a single surface) located over keypad area **110** and forming part of keypad area **110**. As described above, position sensing logic **340** may include a transparent film may be placed on touch sensitive cover **410** or placed underneath touch sensitive cover **410** in order to sense a position of an input (touch).

[0057] Enclosure **420** may include an enclosed area for holding or containing paraffin layer **430** and heating layer **440**. For example, enclosure **420** may be formed of a clear plastic material. Enclosure **420** may contact the bottom surface of touch sensitive cover **410** so that mechanical vibrations and/or expansions of paraffin layer **430** created within enclosure **420** may be transmitted to touch sensitive cover **410**.

[0058] Paraffin layer **430** may include a clear layer of paraffin wax, for example. Paraffin layer **430** may have a chemical formula such as C_nH_{2n+2} . Paraffin layer **430** may have expansive properties, such that the volume of paraffin layer **430** may expand or increase when heated. Paraffin layer **430** may be solid at room temperature and may melt when heat is applied. Further, paraffin layer **430** may return to solid form and its original volume when cooled. Paraffin layer **430** may be used to provide a medium in which to create and transmit expansions and/or mechanical vibrations that may be provided or created by applying heat to paraffin layer **430** via a heating layer **440**. In other embodiments, paraffin layer **430** may include excess electrons (via electron doping) to form an electrically conductive layer, such that when in contact with heating layer **440**, an electrical circuit may be formed as described below.

[0059] Heating layer **440** may include a clear layer of electrically conductive material that when activated produces heat. For example, heating layer **440** may include a silicon based material that may receive an electrical signal from heating activation logic **350** and may provide/produce heat in response to the received signal. Heating layer **440** may be included within enclosure **420**. When heating layer **440** produces heat, the heat may cause adjacent paraffin layer **430** to melt and expand. The expansion of paraffin layer **430** may be transmitted through enclosure **420** to give the user tactile feedback that a key input has been received by terminal **100**. In another exemplary implementation, heating layer **440** may be activated by physically touching paraffin layer **430**. For example, when a user presses down on touch sensitive cover **410**, an electrical circuit may be formed using an electron doped paraffin layer **430**, heating layer **440** and heating activation logic **350**. As described above, the current flowing through heating layer **440** may produce heat which causes a volume expansion of paraffin layer **430**, which causes a mechanical vibration or other physical sensation to be transmitted through enclosure **420** to provide tactile feedback to a user.

[0060] In other exemplary implementations, multiple heating layers **440** and/or multiple discrete heaters may be used and may be located at other positions within terminal **100**. For example, there may be multiple heating layers **440** strategically located to provide greater/stronger tactile feedback depending on where the user presses down. For example, keypad area **110** may be divided into four quadrants, where a heating layer **440** may be located in each quadrant. The heating layer **440** located in the quadrant that receives a touch input may be activated in order to provide a stronger expansion

of paraffin layer **430** as the expansion/mechanical vibration may be less dispersed. In still other implementations, a heating layer/element may be located below each of keys **112** (or other display elements) in keypad area **110** to provide a stronger tactile feedback.

[0061] Display screen **450** may include an LCD or similar type of display. Display screen **450** may display characters based on signals received from display logic **320**. As shown in FIG. 4B for example, display screen **450** may display keys **112A-112L**, which may be seen by a user through touch sensitive cover **410**. Operation of the key input system shown in FIGS. 4A-4B is described below with reference to FIG. 5.

[0062] FIG. 5 is a flowchart of exemplary processing consistent with the principles described herein. Terminal **100** may provide a keypad configuration as shown in FIG. 1. Process **500** may begin when a position of input may be sensed (block **510**). As shown in FIG. 4B for example, a user's finger may be located over (and contacting touch sensitive cover **410**) key **112F** within keypad area **110**. As described above, the position of the user's finger may be sensed by, for example, a capacitive, resistive, inductive or pressure-sensitive film that sends a signal to position sensing logic **340**.

[0063] While a user's finger is touching one of keys **112** within keypad area **110**, heating layer **440** may be activated (block **520**). For example, position sensing logic **340** may send a signal to heating activation logic **350** indicating that a user is currently touching one of keys **112** within keypad area **110**. In response to this signal, heating activation logic **350** may send a signal and/or provide power to heating layer **440** (block **520**). As described above, the signal and/or power (e.g., voltage) applied to heating layer **440** may cause paraffin layer **430** to expand and produce a mechanical vibration or other physical sensation. The mechanical expansion/vibration produced within enclosure **420** may be felt by the user while touching keypad area **110**. The mechanical expansion/vibration may provide tactile feedback to the user indicating that terminal **100** has received the input corresponding to the user's intention to enter information associated with one of keys **112**. That is, the expansion/vibration within enclosure **420** may be transmitted and sensed at the upper surface of touch sensitive cover **410** to provide tactile feedback to the user. In other examples, heating layer **440** may be activated by forming or completing a closed electrical circuit using an electron doped paraffin layer **430**, heating layer **440** and heating activation logic **350** when a user presses down on touch sensitive cover **410** (block **520**).

[0064] After activating the heating layer **440** and receiving an input signal on keypad area **110**, the sensed position signal may be processed to determine a key input (block **530**). As shown in FIG. 4B for example, if the position of a user's finger is contacting the "6" key **112F** in keypad area **110**, position sensing logic **340** may receive signals from a capacitive, resistive, inductive, pressure sensitive film on touch sensitive cover **410**. In response to the received signals from the capacitive, resistive, inductive, pressure sensitive film, position sensing logic **340** may determine that the number "6" has been entered by the user.

[0065] In response to determining the key input (block **530**), the associated information with the determined key input may be displayed (block **540**). For example, if position sensing logic **340** determines that key **112F** is actuated, a signal may be sent to display logic **320** and control logic **310** in order to display the number "6" via display **140** as illus-